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**Title**                      Decoherence as an Obstacle to Quantum Computing

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### **Abstract**

*Decoherence - the loss of superposition, remains the most important obstacle to the exploitation of the exponential speedup promised by quantum computers. Decoherence is fundamentally related to the quantum process of measurement. In this report, quantum measurement is studied as a physical process and decoherence is explained both as an inevitable quantum mechanical phenomenon, and a problem for quantum computation.*